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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/533,368

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Gregory D. Len

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FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
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EXAMINER

YANCHUK, STEPHEN J

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/533,368	Applicant(s) LEN ET AL.	
	Examiner STEPHEN YANCHUK	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/29/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

**METHOD AND SYSTEM FOR CONTROLLING FLUID FLOW IN A FUEL
PROCESSING SYSTEM**

Examiner: S. Yanchuk SN: 10/533368 Art: 1795 February 12, 2009

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-9, drawn to method of controlling fluid, classified in class 702, subclass 60.
 - II. Claims 10-25, drawn to a fuel cell controlling unit, classified in class 429, subclass 22.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the process for using the product as claimed can be practiced with a materially different product such as a non-fuel cell power plant or power device, or any fluid injection system.
3. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after

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the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. During a telephone conversation with Mark Swee on Jan 14, 2009 a provisional election was made without traverse to prosecute the invention of II, claims 10-25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-9 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

6. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are

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subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10-22 & 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Keskula et al. (PGPUB 2003/0186096).

Keskula teaching an air distribution method and controller for a fuel cell system.

One of his embodiments is shown in figure 1 which comprises:

Fuel reforming unit (24) having a fluid inlet (14-2);

Hydrogen-cleanup unit (26) having a fluid inlet (14-3);

Fluid conduit for providing fuel to the fuel cell (14-4, 14-5);

Controller (50).

The controller communicates with the various MAFs (Mass airflow sensors) to adjust the MFCs (Mass airflow controllers), which the MAF takes a reading based on a timer and the MFC makes adjustments based on the reading [Paragraph 9].

The claimed functionality of the controller is:

Open the flow valve for a specific fuel cell subsection;

Sensor associated with the first fluid inlet that regulates the rate of fluid;

Sensor reading has some form of time constraint, the inlets for the other fuel cell subsections are regulate;

Controller is capable of flowing less than 10% the initial volume of fluid compared to the first inlet.

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The controller described in the prior art is capable of performing the claimed functionality. The airflow sensor (16-2) senses the airflow in the tubing (22-2) and the mass airflow controller (18-2) adjusts and controls the airflow that is delivered to the POx reactor (24) [Paragraph 20]. The other fuel cell subsystems have the same capabilities [Paragraph 21]. The sensors take readings periodically (time) [Paragraph 9]. The method of control for the controller is described in Paragraph 25 & Paragraph 26.

In the state when the fuel cell subsystems are turned off, the pressure of the system will be lower than operational pressure. When the system is activated, the pressure of the systems will need to be increased starting with the first inlet. The volume flow of fluid into the first inlet will need to be significantly higher in order get the system operational. The remaining volume flows will be lower because of this. The examiner holds that the controller inherently is capable of performing the last limitation taught by the applicant.

Claim 11 is rejected by the teaching of a fluid flow rate sensor at the first inlet (16-2).

Claim 12 is rejected by the teaching of the fluid being air [Abstract].

Claim 13 is rejected by a compressor (37) that is connected to an inlet of the fuel cell subsystems (14).

Claim 14 is rejected by a connecting pipe (22) that attaches to all subsystems (plenum) and controllable valves that regulate the flow to the subsystems (18).

Claim 15 is rejected by an inlet to a fuel reforming unit (POx) (14-2). This claim language of “first” is held as functional language because all the subsystems are connected via a line (22). The previous claim limitation apply to the fuel reforming subsystem and therefore is held as unpatentable.

Claim 16 is rejected by the teaching of the compressor changing the pressure affects the dynamics of the fuel cell subsystems [Paragraph 28].

Claim 17 is rejected by the sensors and controllers (valves) control the rate of input of fluid into the respective subsystems [Paragraph 20-21].

Claim 18 is rejected by a combustor (20) with a fluid inlet (14-1) with a sensor (16-1) and fluid flow controller (18-1) wherein the sensor is in communication with the airflow controller (50) that is in communication with the other subsystems including the fuel reforming unit, the hydrogen-cleanup unit, the fuel cell, and the combustor. This combustor is equivalent to a “tail gas combustor” because of its link to the fuel cell (31) [Paragraph 19].

Claim 19 is rejected by a partial oxidant reformer (POx) (24).

Claim 20 is rejected by the teaching of an air controller for a fuel cell system that requires multiple air inputs. An autothermal reformer is an obvious substitution for the already existing fuel reformer unit and therefore is anticipated by the reference.

Claim 21 is rejected by the teaching of an air controller for a fuel cell system that requires multiple air inputs. A pure steam reformer is an obvious substitution for the already existing fuel reformer unit and therefore is anticipated by the reference.

Claim 22 is rejected by the teaching of an air controller for a fuel cell system that requires multiple air inputs. A water gas shift reactor is an obvious subsystem to the fuel reforming unit but does not require an air input and therefore is not disclosed in this prior art. Although the water gas shift reactor is not pictured here, one of ordinary skill in the art would understand the various subsystems for fuel reforming and would have incorporated it in the system as a whole.

Claim 25 is rejected by the compressor (37) being coupled to the first inlet wherein a compressor is an air pump.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keskula et al. (PGPUB 2003/0186096) as applied to claim 10 above, and further in view of Balasubramanian et al. (US 2003/0031902).

Keskula teaches an controller and control system for delivering a fluid to a multi-component system via one compressor unit and branched distribution means. Keskula fails to teach the fluid being water.

Balasubramanian teaches a controller for controlling the water levels at various multi-component system. It would be obvious for one of ordinary skill in the art to use the controller system of Keskula with the fluid of Balasubramanian because

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Balasubramanian teaches water systems can lower fuel cell operating temperatures and reduce the amount of needed water to humidify the cathode air.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keskula et al. (PGPUB 2003/0186096) as applied to claim 10 above, and further in view of Beckmann et al (PGPUB 2002/0192517).

Keskula teaches an controller and control system for delivering a fluid to a multi-component system via one compressor unit and branched distribution means. Keskula fails to teach the fluid being fuel.

Beckmann teaches a controller and sensor that opens valves to supply fuel to a fuel cell. The setup of Beckmann teaches a way to greatly reduce the time delay in delivering fuel to various parts and under different conditions [Paragraph 10-15]. It would have been obvious for one of ordinary skill in the art to make the known alterations to the setup of Keskula to function with fuel because Beckmann teaches that ability to provide fuel to various parts of the system can satisfy an increase in demand for energy that is put on the system [Paragraph 13].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN YANCHUK whose telephone number is (571)270-7343. The examiner can normally be reached on Monday through Thursday 8:30am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/STEPHEN YANCHUK/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795